CLAIMS

We claim:

1. A transceiver for bidirectional frequency division multiplexed transmission comprising:

transmission means for transmitting data in at least one transmission frequency range;

receiving means for receiving data in at least one receiving frequency range; and

a coupling impedance for connecting the transmission means and the receiving means to a transmission medium;

in which the transmission means has a voltage source output and the magnitude of the coupling impedance in the transmission frequency range is smaller than the magnitude of the coupling impedance in the receiving frequency range or

in which the transmission means has a current source output and the magnitude of the coupling impedance in the transmission frequency range is higher than the magnitude of the coupling impedance in the receiving frequency range.

2. The transceiver of Claim 1, in which the coupling impedance in the receiving frequency range is substantially identical to the complex conjugate of the transmission medium in the receiving frequency range.

3. The transceiver of Claim 1, in which the transmission means is a voltage source and the transmission frequency range comprises higher frequencies than the receiving frequency range and the coupling impedance at least in the frequency range comprising the transmission frequency range and the receiving frequency range has a high pass filter characteristic.

4. The transceiver of Claim 3, in which the coupling impedance is a parallel combination of a capacitor and a resistor.

5. The transceiver of Claim 1, in which the transmission means is a voltage source and the transmission frequency range comprises lower frequencies than the receiving frequency range and the coupling impedance at least in the frequency range comprising the transmission frequency range and the receiving frequency range has a low pass filter characteristic.

6. The transceiver of Claim 5, in which the coupling impedance is a parallel combination of an inductor and a resistor.

7. The transceiver of Claim 1, in which the coupling impedance is a parallel combination of a resistor and a serial combination of capacitor and an inductor.

8. The transceiver of Claim 1, in which the coupling impedance is a parallel combination of a resistor, an inductor and a capacitor.

9. The transceiver of Claim 1, in which each transmission frequency range is separated by a threshold frequency (f_x) from each receiving frequency range.

10. A communication system for a digital subscriber line comprising at least one transceiver of claim 1.

11. A communication system comprising two or more transceivers with transmission means, in which the transmitting frequency range of a first transceiver corresponding to the receiving frequency range of a second transceiver is above a threshold frequency (f_x) and the receiving frequency range of the first transceiver corresponding to the transmitting frequency range of the second transceiver is below the threshold frequency (f_x); and, a first coupling impedance of the first transceiver comprising a high pass filter characteristic and a second coupling impedance of the second transceiver comprising a low pass filter characteristic if the transmissions means of the

transceivers have voltage source outputs, and, the first coupling impedance of the first transceiver comprising a low pass filter characteristic and the second coupling impedance of the second transceiver comprising a high pass filter characteristic if the transmissions means of the transceivers have current source outputs .